

# United States Department of Agriculture,

## DIVISION OF AGROSTOLOGY.

(GRASS AND FORAGE-PLANT INVESTIGATIONS.)

### LIST OF THE PUBLICATIONS OF THE DIVISION OF AGROSTOLOGY.

#### ANNUAL REPORTS.

(The annual reports of the Chief of the Division of Agrostology are bound with those of the Secretary of Agriculture, and since 1896 have also been published separately.)

Report of the Agrostologist for 1895. By F. Lamson-Scribner.  
From the Report of the Secretary of Agriculture for 1895. Pp. 165-168.

Report of the Agrostologist for 1896. By F. Lamson-Scribner.  
From Report of the Secretary of Agriculture for 1896. Pp. 103-108.

Report of the Agrostologist for 1897. By F. Lamson-Scribner.  
From Annual Reports, Department of Agriculture for 1897. Pp. 161-166.

Report of the Agrostologist for 1898. By F. Lamson-Scribner.  
From Annual Reports, Department of Agriculture for 1898. Pp. 145-152.

Report of the Agrostologist for 1899. By F. Lamson-Scribner.  
From Report of the Secretary of Agriculture for 1899. Pp. 113-117.

Report of the Agrostologist for 1900. By F. Lamson-Scribner.  
From the Annual Reports of the Department of Agriculture for 1900. Pp. 83-90.

#### YEARBOOK ARTICLES.

Grasses as Sand and Soil Binders. By F. Lamson-Scribner. Reprint from the Yearbook of the U. S. Department of Agriculture for 1894. Pp 421-436, figs. 100-110.

Grasses of the Salt Marshes. By F. Lamson-Scribner. Reprint from the Yearbook of the U. S. Department of Agriculture for 1895. Pp. 325-332, figs. 75-79.

Canadian Field Peas. By Thos. Shaw. Reprint from the Yearbook of the U. S. Department of Agriculture for 1895. Pp. 223-232, figs. 46-48.

Grass Gardens. By F. Lamson-Scribner. Reprint from the Yearbook of the U. S. Department of Agriculture for 1895. Pp. 301-308, figs. 68-69.

Forage Conditions of the Prairie Region. By Jared G. Smith. Reprint from the Yearbook of the U. S. Department of Agriculture for 1895. Pp. 309-324, figs. 70-74.



- Timothy in the Prairie Region. By Thomas A. Williams. Reprint from the Yearbook of the U. S. Department of Agriculture for 1896. Pp. 147-154, figs. 29-30.
- Division of Agrostology. By F. Lamson-Scribner. Reprint from the Yearbook of the U. S. Department of Agriculture for 1897. Pp. 160-175, pl. 1.
- Lawns and Lawn Making. By F. Lamson-Scribner. Reprint from the Yearbook of the U. S. Department of Agriculture for 1897. Pp. 355-372, pls. 8-14.
- Leguminous Forage Crops. By Jared G. Smith. Reprint from the Yearbook of the U. S. Department of Agriculture for 1897. Pp. 487-508, pl. 31, figs. 17-24.
- Sand-Binding Grasses. By F. Lamson-Scribner. Reprint from the Yearbook of the U. S. Department of Agriculture for 1898. Pp. 405-420, pls. 28-30, figs. 110-120.
- Forage Plants for Cultivation on Alkali Soils. By Jared G. Smith. Reprint from the Yearbook of the U. S. Department of Agriculture for 1898. Pp. 535-550, figs. 125-128.
- Succulent Forage for the Farm and Dairy. By Thos. A. Williams. Reprint from the Yearbook of the U. S. Department of Agriculture for 1899. Pp. 613-626, pls. 59-60.
- Progress of Economic and Scientific Agrostology. By F. Lamson-Scribner. Reprint from the Yearbook of the U. S. Department of Agriculture for 1899. Pp. 347-366, figs. 5-9.
- Our Native Pasture Plants. By F. Lamson-Scribner. Reprint from the Yearbook of the U. S. Department of Agriculture for 1900. Pp. 581-598, pls. 76-79, figs. 75-85.

#### BULLETINS.

- No. 1.—Notes on the Grasses and Forage Plants of the Southeastern States. By T. H. Kearney, jr., Assistant Agrostologist. Pp. 28, figs. 7. 1895.

This bulletin is divided into two parts, the first of which gives an alphabetical list of the grasses and other plants of importance as forage found in the sections visited, with brief economic notes on each. The second part contains a classified list of the species found with remarks upon their distribution and variations in forms.

- No. 2.—Fodder and Forage Plants Exclusive of the Grasses. By Jared G. Smith, Assistant Agrostologist. Pp. 58, figs. 56. 1896.

A revise of this bulletin was published in 1900, containing 86 pages, 46 figures, and 2 plates. The work contains brief descriptions of about 200 species of native and introduced forage plants. The descriptions are brief and remarks under each species afford such information as farmers and those interested would be most likely to wish to know.

- No. 3.—Useful and Economic Grasses. By F. Lamson-Scribner. Pp. 119, figs. 89. 1896.

This bulletin contains an enumeration of the more important grasses of this and other countries with brief descriptions and economic notes.

- No. 4.—Studies on American Grasses. Pp. 43, pls. 5, figs. 15. February 6, 1897.

This is a technical bulletin and contains the following papers: I. The Genus *Ixophorus*, by F. Lamson-Scribner; II. A List of the Grasses collected by Dr.



E. Palmer in the vicinity of Acapulco, Mexico, 1894-95, by F. Lamson-Scribner; III. Some Mexican Grasses collected by E. W. Nelson in Mexico, 1894-95, by F. Lamson-Scribner and Jared G. Smith; IV. Some American Panicums in the Herbarium Berolinense and in the Herbarium of Willdenow; by Theo. Holm; V. Native and Introduced Species of the Genera *Hordeum* and *Agropyron*, by F. Lamson-Scribner and Jared G. Smith; VI. Miscellaneous Notes and Descriptions of New Species. The new species of *Fourniera* is here described and illustrated as well as a number of new species from various sources.

No. 5.—A Report upon the Grasses and Forage Plants of the Rocky Mountain region. By P. A. Rydberg and C. L. Shear. Pp. 48, figs. 29. 1897.

This bulletin is based upon the field notes and general observations made by the authors in Nebraska, Idaho, Montana, Utah, and Colorado during the summer of 1895. The first part contains descriptions of the more important economic species observed and a classified list of all the species collected with notes upon their distribution, etc., closes the bulletin.

No. 6.—Grasses and Forage Plants of the Dakotas. By Thos. A. Williams. Pp. 47, figs 10. 1897.

This bulletin contains general notes of the forage conditions in the Dakotas, a general review of the species which are or may be important for forage and a classified list of all the grasses and forage plants collected or observed in the Dakotas in 1896 by the author, who was assisted by Messrs. M. A. Brannon, E. N. Wilcox, and David Griffiths.

No. 7.—American Grasses, I. Pp. 319, illustrations 302. 1897.

A second revised edition of this bulletin was published in 1898, and a third revise in which the descriptions were entirely rewritten and enlarged, was published in 1900.

No. 8.—Studies on American Grasses. Pp. 20, pls. 9, fig. 1. May 1, 1897.

This is a technical bulletin and contains the following papers: "New or Little-Known Grasses," by F. Lamson-Scribner; and "The Leaf Structure of *Jouvea* and of *Eragrostis obtusiflora*," by Miss E. L. Ogden.

No. 9.—Notes on the Grasses and Forage Plants of Iowa, Nebraska, and Colorado. By L. H. Pammel. Pp. 47, figs. 12. 1897.

This report contains, first, general observations upon the physical conditions and important questions relative to forage production in the States named. The second part is devoted to an enumeration of the more important grasses and forage plants of these States with economic notes. In the third part the author presents a classified list of the grasses of Iowa, Nebraska, and Colorado, collected by him during the seasons of 1895 and 1896.

No. 10.—A Report upon the Grasses and Forage Plants of Central Texas. By H. L. Bentley. Pp. 38, figs. 14. 1898.

This report contains brief accounts of the physical condition of central Texas, the early condition of the cattle ranges and popular descriptions and general observations upon the economic importance of a large number of the grasses and forage plants native to the region.

No. 11.—Studies on American Grasses. Pp. 62, pls. 17, figs. 12. July 20, 1898.

This bulletin contains; "A Revision of the Native American Species of *Calamagrostis*," by Thos. H. Kearney, jr.; and "Descriptions of New or Little-Known Grasses," by F. Lamson-Scribner.

No. 12.—A Report upon the Grasses and Forage Plants and Forage Conditions of the Eastern Rocky Mountain Region. By Thos. A. Williams. Pp. 78, figs. 30. 1898.

This bulletin is based upon the field observations of Mr. Williams and agents of the Division in 1896 and 1897. The general topographical features of the region in question are discussed; also the present aspect of the forage problem, and



the forage conditions on the ranges of South Dakota and northwestern Wyoming. The cultivated grasses and forage plants are treated somewhat in detail, as are also the native plants of the same class.

No. 13.—The Red Desert of Wyoming and Its Forage Resources. By Aven Nelson. Pp. 72. pls. 5, figs. 24. 1898.

This bulletin treats of the topography of the soils and climate of the Red Desert of Wyoming, the characteristic desert plants and forage plants of the summer range, and closes with a list of the plants of the Red Desert based upon specimens secured by the author during the summer of 1897.

No. 14.—Economic Grasses. By F. Lamson-Scribner. Pp. 85, pls. 3, figs. 91. 1898.

This is practically a revision of Bulletin No. 3, with the addition of some new figures and plates. The work closes with a list of grasses for special soils or uses.

No. 15.—A Report upon the Forage Plants and Forage Resources of the Gulf States. By S. M. Tracy. Pp. 55, figs. 20. 1898.

This work treats of the soils and natural pastures of the Gulf States, formation of pastures, the leading forage plants and the more important hay and pasture grasses and miscellaneous forage crops.

No. 16.—Grazing Problems in the Southwest and How to Meet Them. By Jared G. Smith. Pp. 47, figs. 9. 1899.

This bulletin treats of the former condition of the ranges, their present condition, and the causes which have led to their deterioration, the renewing of the cattle ranges, the relation of land laws to range improvement, etc.

No. 17.—American Grasses, II. By F. Lamson-Scribner. Pp. 349, figs. 325. 1899.

A revised edition of this work was published in 1901. This work is a continuation of Bulletin No. 7, and is uniform with the third edition of that bulletin in type and illustrations.

No. 18.—Studies on American Grasses: A synopsis of the Genus *Sitanion*. By Jared G. Smith. Pp. 21, pls. 4. June 24, 1899.

Twenty-two species of the genus *Sitanion* are here described.

No. 19.—Structure of the Caryopsis of Grasses with Relation to Their Morphological Classification. By P. B. Kennedy. Pp. 44, pls. 8. 1899.

No. 20.—American Grasses, III. By F. Lamson-Scribner. Pp. 197, figs. 136. 1900.

This bulletin includes descriptions of the tribes and genera and a bibliography of the works cited in American Grasses, I, II, and III.

No. 21.—Studies on American Grasses. The native American species of *Chaetochloa*. By F. Lamson-Scribner and Elmer D. Merrill. Pp. 44, figs. 24. March 8, 1900.

In this paper twenty-eight native American species are described, twenty-three of which are natives of this continent. Six of these species are here published for the first time.

No. 22.—Cooperative Experiments with Grasses and Forage Plants. By P. B. Kennedy. Pp. 86, pls. 13, fig. 1. 1900.

In this bulletin the reports received from farmers and others to whom seeds were sent for experimental purposes from the Division are presented.



No. 23.—Studies on American Grasses. A revision of the North American species of *Bromus* occurring north of Mexico. By Cornelius L. Shear. Pp. 66, figs. 40. July 3, 1900.

This bulletin contains descriptions of thirty-six species and twenty-eight varieties of the genus *Bromus*. Three species and fifteen varieties are described as new.

No. 24.—Studies on American Grasses. Pp. 55, figs. 23. January 9, 1901.

This bulletin contains the following papers: (1) "Some Recent Collections of Mexican Grasses," by F. Lamson-Scribner and Elmer D. Merrill; (2) "Notes on *Panicum nitidum* Lam., *Panicum scoparium* Lam., and *Panicum pubescens* Lam.," by F. Lamson-Scribner and Elmer D. Merrill; (3) "Miscellaneous Notes and Descriptions of New Species," by F. Lamson-Scribner and Carleton R. Ball.

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#### CIRCULARS.

No. 1.—A Note on Experimental Grass Gardens. By J. G. Smith. Pp. 4. 1895.

No. 2.—Hairy Vetch, Sand Vetch, or Russian Vetch. By F. Lamson-Scribner. Pp. 4, fig. 1. 1895.

No. 3.—Saltbushes. By Jared G. Smith. Pp. 4, figs. 3. 1896.

No. 4.—Renewing of Worn-out Native Prairie Pastures. By Thos. A. Williams. Pp. 4, figs. 4. 1896.

No. 5.—Cowpeas. By Jared G. Smith. Reprint from the Yearbook of the U. S. Department of Agriculture for 1896. Pp. 11. 1898.

No. 6.—Cultivated Vetches. By Jared G. Smith. Winter vetch, hairy vetch, guinea vetch, and Dakota vetch, are described and illustrated. Pp. 8, figs. 6. 1898. Revised.

No. 7.—Gram, Chick Pea, or Idaho Pea. By J. G. Smith. Pp. 4, fig. 1. 1898.

No. 8.—Experiments in Range Improvement. By J. G. Smith. Pp. 5, fig. 1. 1898.

Relates to the experiments conducted at Abilene, Texas, by Mr. H. L. Bentley, Special Agent of this Division.

No. 9.—New Species of North American Grasses. By F. Lamson-Scribner. Pp. 7, figs. 24. February 24, 1899.

Fourteen new species are described.

No. 10.—*Poa fendleriana* and its Allies. By Thos. A. Williams. Pp. 6, fig. 1. April 15, 1899.

No. 11.—The Flat Pea. By F. Lamson-Scribner. Pp. 6, figs. 3. 1899.

Describes the Flat Pea (*Lathyrus sylvestris*), its method of cultivation and uses.

No. 12.—Rape as a Forage Plant. By Thos. A. Williams. Pp. 6, fig. 1. 1899.

No. 13.—Florida Beggarweed. By Jared G. Smith. Pp. 5, figs. 2. 1899.

No. 14.—Velvet Bean. By Jared G. Smith. Pp. 5, figs. 3. 1899.



No. 15.—Recent Additions to Systematic Agrostology. By F. Lamson-Scribner. Pp. 10, figs. 5. July 14, 1899.

Gives description of genera and cites synonyms not published in Hackel's "True Grasses." The contents of the circular are based largely upon a supplement to Engler & Prantl's "Pflanzenfamilien." *Fourniera mexicana*, *Ixophorus unisetus*, *Opizia stolonifera*, and *Pringleochloa mexicana*, are illustrated.

No. 16.—New Species of North American Grasses. By F. Lamson-Scribner. Pp. 6, figs. 2. July 1, 1899.

Nine new species are described. *Puccinellia simplex* Scribn. and *Dactyloctenium australiense* Scribn. are illustrated.

No. 17.—Crimson Clover. By Thos. A. Williams. Pp. 6, figs. 3. 1899.

No. 18.—Smooth Brome-grass. By P. Beveridge Kennedy. Pp. 9, figs. 2. 1899.

No. 19.—New and Little-Known Mexican Grasses. By F. Lamson-Scribner. Pp. 4, fig. 1. January 2, 1900.

Five new species are described.

No. 20.—Experiments with Forage Plants in Ontario. By P. Beveridge Kennedy. Pp. 3. 1899.

No. 21.—Cooperative Range Grass and Forage Plant Experiments at Highmore, South Dakota. By F. Lamson-Scribner. Pp. 10, fig. 1. 1900.

Describes the experiments being made at Highmore, South Dakota, in cooperation with the South Dakota Experiment Station.

No. 22.—Grass and Forage Plant Investigations on the Pacific Coast. By F. Lamson-Scribner. Pp. 7. 1900.

Describes experiments made in 1899 with grasses and forage plants at Walla Walla and at North Yakima, Washington, in cooperation with the Northern Pacific Railroad and the Oregon Railroad and Navigation Companies.

No. 23.—Progress of Experiments in Forage Crops and Range Improvement at Abilene, Texas. By H. L. Bentley. Pp. 20. 1900.

Descriptions of the experiments with grasses and forage plants made at Abilene, Texas, under the immediate charge of H. L. Bentley, Special Agent.

No. 24.—Cowpeas and Corn for Silage and Fodder. By W. Gettys, Athens, Tennessee. Pp. 10, figs. 2. 1900.

No. 25.—Turkestan Alfalfa. By P. Beveridge Kennedy. Pp. 20. 1900.

This circular includes reports on trials with Turkestan alfalfa from those to whom seed was sent by the Department of Agriculture.

No. 26.—Rescue Grass. By C. L. Shear. Pp. 4, fig. 1. 1900.

Brief description of rescue grass (*Bromus unioides*), and an account of its cultivation and value.

No. 27.—Agrostological Notes. Pp. 10. December 4, 1900.

This circular contains the following short papers: (1) "Grasses in the Herbarium of Dr. H. Muhlenberg;" (2) "New Species of Eatonia;" (3) "A New Variety of *Panicum nashianum*;" (4) "Nomenclature Notes;" (5) "Notes on *Melica* and *Stipa*."

No. 28.—Grasses and Fodder Plants on the Potomac Flats. By Carleton R. Ball. Pp. 18. 1900.

This circular gives a brief account of the grasses and fodder plants grown by this Division on the Potomac Flats during the season of 1900.



No. 29.—Grasses in Elliott's Sketch of the Botany of South Carolina and Georgia. By F. Lamson-Scribner. Pp. 12, figs. 4. 1901.

The circular is based upon an examination of the grasses in Elliott's herbarium by F. Lamson-Scribner and Elmer D. Merrill. Two new species are described.

No. 30.—New or Little-Known Grasses. By F. Lamson-Scribner. Pp. 8. March 8, 1901.

Seven new species are described. *(filed 12-2-01)*

No. 31.—Bermuda Grass. By A. S. Hitchcock. Pp. 6, fig. 1. 1901.

No. 32.—Some Arizona Grasses. By Elmer D. Merrill. Pp. 10. April 22, 1901.

This circular is based upon specimens collected during the summer of 1900 by Profs. R. H. Forbes and David Griffiths, of the Arizona Experiment Station. Three new species and five new varieties are described.

No. 33.—Range Grass and Forage-Plant Experiments at Highmore, South Dakota. Report of progress by F. Lamson-Scribner. Pp. 5. 1901.

This circular is a report of the progress of the range experiments carried on by this Division in cooperation with the South Dakota Experiment Station at Highmore, South Dakota.

No. 34.—*Aristida purpurea* Nutt. and Its Allies. By Elmer D. Merrill. Pp. 8. May 24, 1901.

*Aristida fasciculata* Torr. and *Aristida dispersa* Trin. are referred to *Aristida americana* Linn. *Aristida longiseta* Steud. is recognized with three varieties, and *Aristida purpurea* Nutt. is also recognized with three varieties, two of which are new.

No. 35.—Agrostological Notes. By F. Lamson-Scribner and Elmer D. Merrill. Pp. 6. June 18, 1901.

This circular contains the following short articles: (1) "Some Species of Grasses," published by S. B. Buckley; (2) "Notes on *Calamovilfa*;" (3) "Three New Species of *Panicum*;" (4) "A New Species of *Poa*;" (5) "Some Changes in Nomenclature."

No. 36.—List of the Publications of the Division of Agrostology. By F. Lamson-Scribner. Pp. 8. June 29, 1901.

#### FARMERS' BULLETINS.

No. 31.—Alfalfa, or Lucern. By Jared G. Smith. Pp. 24, figs. 3. 1895.

Several editions of this bulletin have been published. It contains a full account of the history, habits of growth, methods of cultivation, harvesting, etc., of alfalfa.

No. 50.—Sorghum as a Forage Crop. By Thos. Williams. Pp. 20, fig. 1. 1897.

Treats of the extent of cultivation in the United States, varieties, conditions of growth, methods of harvesting, etc.

No. 58.—Soy Bean as a Forage Crop. By Thos. A. Williams. Pp. 24. 1898. Revised 1899.

This bulletin treats of the varieties, methods of culture, harvesting, value as a soiling crop, as a hay crop, as a soil renovator, etc. There is an appendix on the "Soy Bean as Food for Man," by C. F. Langworthy, of the Office of Experiment Stations.



No. 66.—Meadows and Pastures. By Jared G. Smith. Formation in the Middle Eastern States. Pp. 28, figs. 9. 1898. Revised 1899.

This bulletin treats of grasses as soil builders, fertilizers for grass lands, methods of preparing the soil, manner of sowing the seed, varieties of hay grasses, clovers for meadows and pastures, and some grass mixtures.

No. 72.—Cattle Ranges of the Southwest. A history of the exhaustion of the pasturage and suggestions for its restoration. By H. L. Bentley. Pp. 32, figs. 9. 1898.

This bulletin treats of the early and present condition of the Texas pastures, especially those of central Texas, the obstacles to the renewal or improvement of the ranges, how the ranges may be renewed. There is also a discussion of the remaining grasses and forage plants native to the Southwest.

No. 89.—Cowpeas. By Jared G. Smith. Pp. 16. 1899.

No. 101.—Millets. By Thos. A. Williams. Pp. 28, figs. 6. 1899.

This bulletin treats of the place of millets among the farm crops, of the cultivated varieties of foxtail millet, barnyard millet, broom corn millet, the culture of millet, and their uses and value.

No. 102.—Southern Forage Plants. By F. Lamson-Scribner. Pp. 48, figs. 14. 1899.

This bulletin treats of the formation and care of pastures, soiling and fodder crops, the more important grasses for hay and pasture lands, leguminous forage crops, and miscellaneous forage plants.

No. 108.—Saltbushes. By P. Beveridge Kennedy. Pp. 20, figs. 9. 1900.

This bulletin treats of the general characteristics of the introduced and American saltbushes, chemical composition of saltbushes and their feeding value, and miscellaneous plants for alkali soils.

F. LAMSON-SCRIBNER,  
*Agrostologist.*

Approved:

JAMES WILSON,  
*Secretary of Agriculture.*

WASHINGTON, D. C., June 12, 1901.